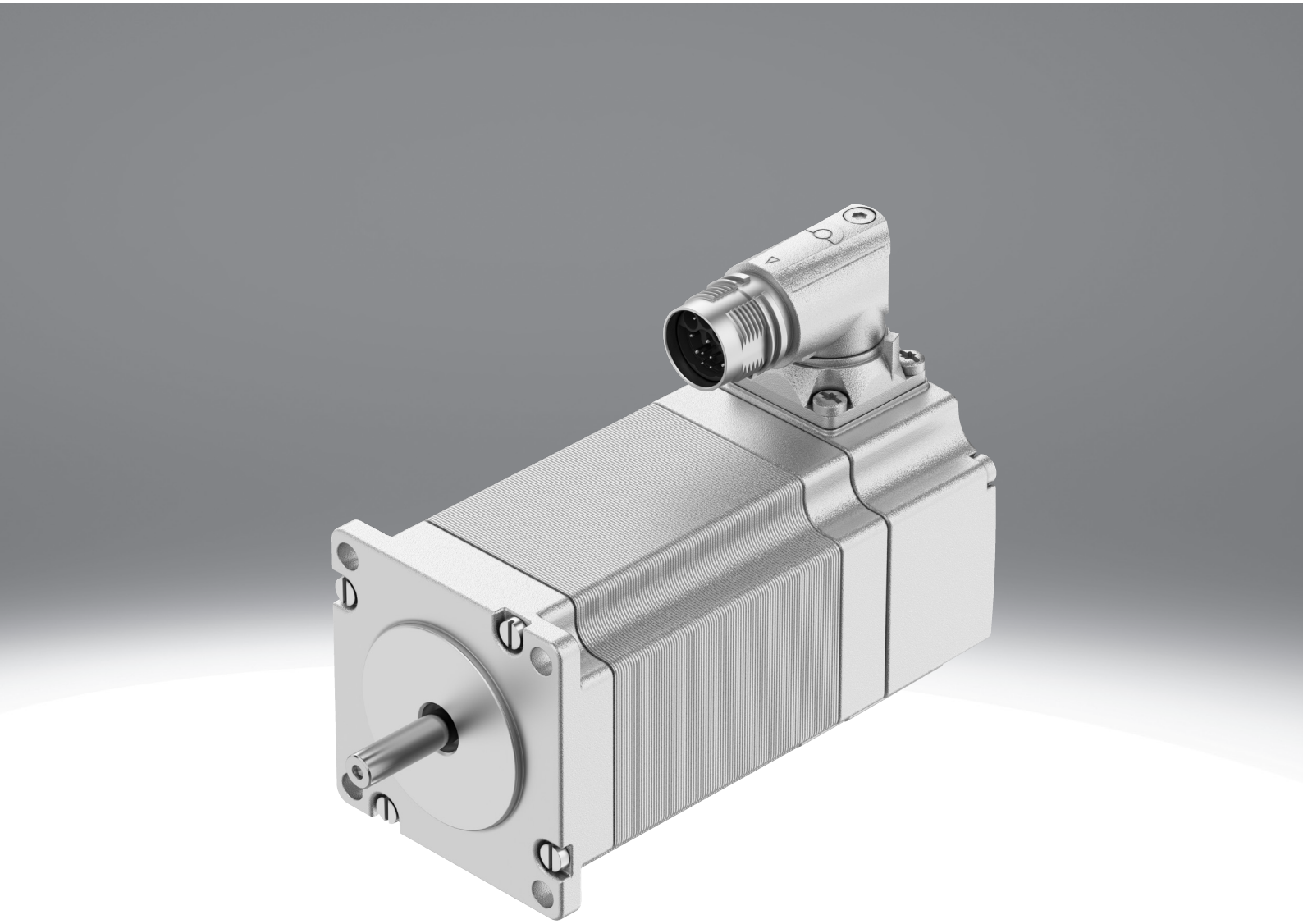
Stepper motor EMMT-ST



Characteristics

At a glance

- 2-phase hybrid technology
- 3 flange sizes available: M = 0.25 ... 9.4 Nm

Degree of protection:
- IP40 (motor shaft)
- IP65 (motor housing with connection technology)

Connection technology:
- Simple connection technology (OCP: one cable plug) – hybrid cable: motor cable and connecting cable for supply and encoder in one
- Plug can be rotated 290°

Digital absolute encoder system:
- Single turn
- Multi-turn

Engineering tools

Link 🔗 electric motion sizing

Save time with engineering tools: Smart engineering for the optimal solution. Our goal is to increase your productivity. Our engineering tools play an integral part in achieving this goal. They help you size your system correctly, tap into unimagined productivity reserves and generate additional productivity along the entire value chain. In every phase of your project, from the initial contact to the modernisation of your machine, you will come across a number of different tools that will be of use to you.

Electric Motion Sizing
- Create the optimum drive package quickly and reliably. Electric Motion Sizing calculates suitable combinations of electric axis, electric motor and servo drive using just a few application details. It provides all the relevant data including the bill of materials and documentation for your selected combination. This avoids design errors and results in significantly improved energy efficiency for the system. A smooth connection to the Festo Automation Suite also makes commissioning easier for you.

Festo Automation Suite
- Parameterisation, programming and commissioning in a clear and user-friendly interface
- Optimal support for complex processes thanks to guided wizards (e.g. for initial commissioning, drive configuration, etc.)
- Quick access to the required documents and further information
- Easy integration of electric drives in the controller programming

Diagrams

Link 🔗 emmt-st

The diagrams shown in this document are also available online. These can be used to display precise values.

Measuring unit

[S] Absolute encoder, single turn

- The angular position is assigned to a unique value in coded form.
- The position is only detected within one turn. All subsequent turns need to be counted by the higher-level device.
- When switched off, the position is only sensed within one turn.
- Following switch-on, a homing run is required.

[M] Absolute encoder, multi-turn

- A unique value in coded form is assigned to the angular position and each full turn.
- This type counts the full turns until the specified maximum is reached (including when switched off).
- Homing is only required once it has been installed in the application.

Brake

[B] With brake

The holding brake should not be used as a safety brake.

Type code

001	Series	
EMMT	Motor	

002	Motor type	
ST	Stepper motor ST	

003	Flange size, motors [mm]	
42	42	
57	57	
87	87	

004	Length	
S	Short	
M	Medium	
L	Long	

005	Electrical connection	
R	Angled connector, adjustable	

006	Measuring unit	
	None	
M	Absolute encoder, multi-turn	
S	Absolute encoder, single turn	

007	Brake	
	None	
B	With brake	

Datasheet

General technical data – EMMT-ST-42						
Flange size, motors [mm]	42 mm					
Length	Short			Long		
Measuring unit	None	Absolute encoder, multi-turn	Absolute encoder, single turn	None	Absolute encoder, multi-turn	Absolute encoder, single turn
Nominal operating voltage DC	48 V					
Nominal motor current	1.8 A			3.4 A		
Continuous stall current	2 A			3.7 A		
Peak current	2 A			4 A		
Nominal power rating of motor	–	17 W		–	56 W	
Stepper angle for complete step	1.8 deg					
Stepping angle tolerance	±5%					
Motor holding torque	0.25 Nm			0.63 Nm		
Nominal torque [1]	–	0.24 Nm		–	0.54 Nm	
Peak torque	0.25 Nm			0.63 Nm		
Standstill torque	–					
Nominal rotary speed	–	600 rpm		–	1,000 rpm	
Max. rotational speed	2,700 rpm			3,200 rpm		
Max. mechanical speed	9,000 rpm					
Motor constant	0.133 Nm/A			0.162 Nm/A		
Voltage constant, phase	12.1 mVmin			10.6 mVmin		
Electric time constant	1.4 ms			1.3 ms		
Thermal time constant	22 min			16 min		
Thermal resistance	3.5 K/W			2 K/W		
I^2T time motor	2 s					
Number of phases	2					
Number of pole pairs	50					
Phase winding resistance	2.1 Ohm			0.6 Ohm		
Phase winding inductance	0.3 mH			0.8 mH		
Winding longitudinal inductivity Ld (phase)	1.6 mH			1.45 mH		
Winding cross inductivity Lq (phase)	3 mH			0.8 mH		
Permissible axial shaft load	10 N					
Permissible radial shaft load	28 N					
Measuring flange	200 x 200 x 15 mm, steel					

1) There is no nominal operating point defined for motors without encoders.

Datasheet

General technical data – EMMT-ST-57						
Flange size, motors [mm]	57 mm					
Length	Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Nominal operating voltage DC	48 V					
Nominal motor current	5.4 A			5.2 A		
Continuous stall current	6.6 A			6.1 A		
Peak current	8 A					
Nominal power rating of motor	–	87 W		–	86 W	
Stepper angle for complete step	1.8 deg					
Stepping angle tolerance	±5%					
Motor holding torque	1.12 Nm			1.86 Nm		
Nominal torque [1]	–	0.83 Nm		–	1.64 Nm	
Peak torque	1.1 Nm			2.1 Nm		
Standstill torque	–					
Nominal rotary speed	–	1,000 rpm		–	500 rpm	
Max. rotational speed	2,600 rpm			1,500 rpm		
Max. mechanical speed	8,000 rpm					
Motor constant	0.152 Nm/A			0.32 Nm/A		
Voltage constant, phase	13.1 mVmin			22.6 mVmin		
Electric time constant	2.9 ms			3.7 ms		
Thermal time constant	27 min			30 min		
Thermal resistance	1.6 K/W			1.3 K/W		
I^2T time motor	2 s					
Number of phases	2					
Number of pole pairs	50					
Phase winding resistance	0.17 Ohm			0.26 Ohm		
Phase winding inductance	0.5 mH			0.95 mH		
Winding longitudinal inductivity Ld (phase)	0.7 mH			1.75 mH		
Winding cross inductivity Lq (phase)	0.5 mH			0.95 mH		
Permissible axial shaft load	15 N					
Permissible radial shaft load	75 N					
Measuring flange	200 x 200 x 15 mm, steel					

1) There is no nominal operating point defined for motors without encoders.

Datasheet

General technical data – EMMT-ST-87									
Flange size, motors [mm]	87 mm								
Length	Short [S]			Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Nominal operating voltage DC	48 V								
Nominal motor current	7.8 A			7.5 A			8.4 A		
Continuous stall current	9.5 A			8.2 A			10 A		
Peak current	12 A						10 A		
Nominal power rating of motor	–	159 W		–	87 W		–	126 W	
Stepper angle for complete step	1.8 deg								
Stepping angle tolerance	±5%								
Motor holding torque	2.4 Nm			6.6 Nm			9.4 Nm		
Nominal torque [1]	–	1.9 Nm		–	5.9 Nm		–	8.4 Nm	
Peak torque	2.7 Nm			6.8 Nm			9.4 Nm		
Standstill torque	–								
Nominal rotary speed	–	800 rpm		–	140 rpm		–	140 rpm	
Max. rotational speed	2,200 rpm			600 rpm			430 rpm		
Max. mechanical speed	7,000 rpm								
Motor constant	0.24 Nm/A			0.79 Nm/A			1.06 Nm/A		
Voltage constant, phase	15.4 mVmin			56.6 mVmin			78.9 mVmin		
Electric time constant	1.75 ms			8.5 ms			9 ms		
Thermal time constant	35 min			32 min			37 min		
Thermal resistance	0.89 K/W			0.83 K/W			0.75 K/W		
I^2T time motor	2 s								
Number of phases	2								
Number of pole pairs	50								
Phase winding resistance	0.13 Ohm			0.27 Ohm			0.3 Ohm		
Phase winding inductance	0.35 mH			2.3 mH			2.7 mH		
Winding longitudinal inductivity Ld (phase)	0.56 mH			3.6 mH			4.1 mH		
Winding cross inductivity Lq (phase)	0.35 mH			2.3 mH			2.7 mH		
Permissible axial shaft load	60 N								
Permissible radial shaft load	220 N								
Measuring flange	250 x 250 x 15 mm, steel								

1) There is no nominal operating point defined for motors without encoders.

Technical data – Brakes			
Flange size, motors [mm]	42	57	87
Brake holding torque	0.63 Nm	1.74 Nm	4.26 Nm
Operating voltage DC for brake	24 V		
Brake current consumption	0.34 A	0.38 A	0.49 A
Power consumption, brake	8.2 W	9 W	12 W
Brake coil resistance	70.9 Ohm	63.8 Ohm	49.2 Ohm
Brake coil inductivity	146 mH	107 mH	110 mH
Brake separation time	28 ms	32 ms	44 ms
Brake closing time	41 ms	97 ms	110 ms
DC brake response delay	8 ms	11 ms	30 ms
Max. brake no-load speed	9,000 rpm	8,000 rpm	7,000 rpm
Max. friction per braking process	1,500 J	6,000 J	14,000 J
Number of emergency stops per hour	1		
Mass moment of inertia of brake	0.006 kgcm²	0.024 kgcm²	0.11 kgcm²
Switching cycles holding brake [1]	10 million idle actuations (without friction work!)		

1) Guide value for the number of switching operations (release/engage) when used exclusively as a holding brake without friction (i.e. clamping at a standstill).

Datasheet

Technical data – Encoder						
Flange size, motors [mm]	42		57		87	
Measuring unit	Absolute encoder, single turn [S]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	Absolute encoder, multi-turn [M]
Rotor position sensor, encoder measuring principle	magnetic					
Rotor position encoder interface	BiSS-C					
rotor position sensor, absolute detectable revolutions	1	65,536	1	65,536	1	65,536
rotor position sensor, DC operating voltage	5 V			14 V	5 V	14 V
rotor position sensor, DC operating voltage range	4.75 ... 5.25 V	4.5 ... 5.5 V	4.75 ... 5.25 V	4.75 ... 15 V	4.75 ... 5.25 V	4.75 ... 15 V
Rotor pos. enc., sin/cosin p/r	2					
rotor position sensor, position values per revolution	65,536	131,072	65,536	131,072	65,536	131,072
Rotor position transducer resolution	16 bit	17 bit	16 bit	17 bit	16 bit	17 bit
rotor position sensor, system accuracy of angle measurement	-540 ... 540 arcsec	-310 ... 310 arcsec	-540 ... 540 arcsec	-310 ... 310 arcsec	-540 ... 540 arcsec	-310 ... 310 arcsec
rotor position sensor, max. operating speed	5,500 rpm	12,000 rpm	5,500 rpm	12,000 rpm	5,500 rpm	12,000 rpm
rotor position sensor, temperature range	-40 ... 105°C					
Mean time to failure (MTTF), subcomponent [1]	106 years, rotor position encoder	20 years, rotor position encoder	106 years, rotor position encoder	20 years, rotor position encoder	106 years, rotor position encoder	20 years, rotor position encoder

1) The data provided applies to an encoder temperature/operating temperature of 105 °C.

Total output moment of inertia - EMMT-ST-42						
Flange size, motors [mm]	42					
Length	Short [S]					
Measuring unit	None [_]		Absolute encoder, multi-turn [M]		Absolute encoder, single turn [S]	
Brake	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]
Total mass moment of inertia of output	0.035 kgcm²	0.041 kgcm²	0.037 kgcm²	0.043 kgcm²	0.035 kgcm²	0.041 kgcm²

Total output moment of inertia - EMMT-ST-42						
Flange size, motors [mm]	42					
Length	Long [L]					
Measuring unit	None [_]		Absolute encoder, multi-turn [M]		Absolute encoder, single turn [S]	
Brake	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]
Total mass moment of inertia of output	0.082 kgcm²	0.088 kgcm²	0.084 kgcm²	0.09 kgcm²	0.082 kgcm²	0.088 kgcm²

Total output moment of inertia - EMMT-ST-57						
Flange size, motors [mm]	57					
Length	Medium [M]					
Measuring unit	None [_]		Absolute encoder, multi-turn [M]		Absolute encoder, single turn [S]	
Brake	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]
Total mass moment of inertia of output	0.3 kgcm²	0.324 kgcm²	0.306 kgcm²	0.33 kgcm²	0.3 kgcm²	0.324 kgcm²

Total output moment of inertia - EMMT-ST-57						
Flange size, motors [mm]	57					
Length	Long [L]					
Measuring unit	None [_]		Absolute encoder, multi-turn [M]		Absolute encoder, single turn [S]	
Brake	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]
Total mass moment of inertia of output	0.48 kgcm²	0.504 kgcm²	0.486 kgcm²	0.51 kgcm²	0.48 kgcm²	0.504 kgcm²

Datasheet

Total output moment of inertia - EMMT-ST-87						
Flange size, motors [mm]	87					
Length	Short [S]					
Brake	None [_]			With brake [B]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Total mass moment of inertia of output	1 kgcm²	1.006 kgcm²	1 kgcm²	1.11 kgcm²	1.116 kgcm²	1.11 kgcm²

Total output moment of inertia - EMMT-ST-87						
Flange size, motors [mm]	87					
Length	Medium [M]					
Brake	None [_]			With brake [B]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Total mass moment of inertia of output	1.9 kgcm²	1.906 kgcm²	1.9 kgcm²	2.01 kgcm²	2.016 kgcm²	2.01 kgcm²

Total output moment of inertia - EMMT-ST-87						
Flange size, motors [mm]	87					
Length	Long [L]					
Brake	None [_]			With brake [B]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Total mass moment of inertia of output	3 kgcm²	3.006 kgcm²	3 kgcm²	3.11 kgcm²	3.116 kgcm²	3.11 kgcm²

Weight														
Flange size, motors [mm]	42				57				87					
Length	Short [S]		Long [L]		Medium [M]		Long [L]		Short [S]		Medium [M]		Long [L]	
Brake	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]	None [_]	With brake [B]
Product weight	370 g	590 g	560 g	770 g	900 g	1,300 g	1,260 g	1,660 g	2,050 g	2,890 g	3,490 g	4,320 g	4,660 g	5,490 g

Datasheet

Operating and environmental conditions – EMMT-ST-42						
Flange size, motors [mm]	42					
Length	Short [S]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Conforms to standard	IEC 60034					
Motor type to EN 60034-7	IM B5, IM V1, IM V3					
Degree of protection	IP40					
Note on degree of protection	IP40 motor shaft, IP65 for motor housing, incl. connection technology					
Ambient temperature	0 ... 40°C			-15 ... 40°C		
Note on ambient temperature	Up to 80°C with derating -2%/°C					
Storage temperature	-20 ... 70°C					
Max. winding temperature	130°C					
Temperature monitoring	–	Digital Motor temp. via BiSS-C	–		Digital Motor temp. via BiSS-C	–
Rating class as per EN 60034-1	S1					
Temperature class as per EN 60034-1	B					
Relative air humidity	0 - 90%, Non-condensing					
CE mark (see declaration of conformity) [1]	To EU EMC Directive In accordance with EU RoHS Directive					
UKCA marking (see declaration of conformity)[2]	To UK instructions for EMC To UK RoHS instructions					
Approval	RCM c UL us - Recognised (Oil)					
Certificate issuing authority	UL E342973					
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6					
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27					
Isolation resistance AC	0.6					
LABS (PWIS) conformity	VDMA24364 zone III					
Note on materials	RoHS compliant					

1) More information www.festo.com/catalogue/emms-st → Downloads.

2) More information www.festo.com/catalogue/emms-st → Downloads.

Datasheet

Operating and environmental conditions – EMMT-ST-57						
Flange size, motors [mm]	57					
Length	Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Conforms to standard	IEC 60034					
Motor type to EN 60034-7	IM B5, IM V1, IM V3					
Degree of protection	IP40					
Note on degree of protection	IP40 motor shaft, IP65 for motor housing, incl. connection technology					
Ambient temperature	-15 ... 40°C					
Note on ambient temperature	Up to 80°C with derating -2%/°C					
Storage temperature	-20 ... 70°C					
Max. winding temperature	130°C					
Temperature monitoring	–	Digital Motor temp. via BiSS-C	–		Digital Motor temp. via BiSS-C	–
Rating class as per EN 60034-1	S1					
Temperature class as per EN 60034-1	B					
Relative air humidity	0 - 90%, Non-condensing					
CE mark (see declaration of conformity) [1]	To EU EMC Directive In accordance with EU RoHS Directive					
UKCA marking (see declaration of conformity)[2]	To UK instructions for EMC To UK RoHS instructions					
Approval	RCM c UL us - Recognised (Oil)					
Certificate issuing authority	UL E342973					
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6					
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27					
Isolation resistance AC	0.6					
LABS (PWIS) conformity	VDMA24364 zone III					
Note on materials	RoHS compliant					

1) More information www.festo.com/catalogue/emms-st → Downloads.

2) More information www.festo.com/catalogue/emms-st → Downloads.

Datasheet

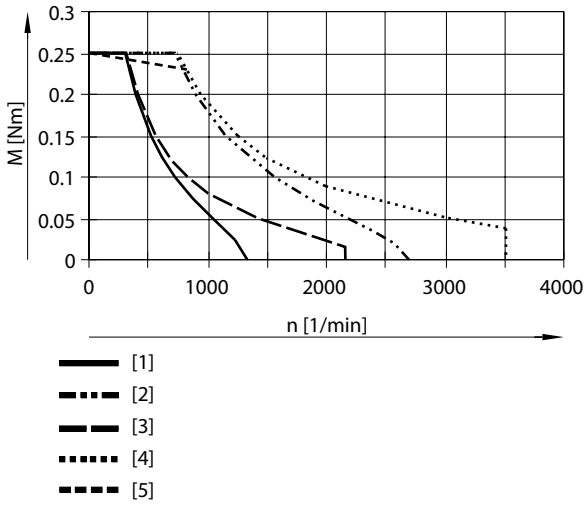
Operating and environmental conditions – EMMT-ST-87

Flange size, motors [mm]	87								
Length	Short [S]			Medium [M]			Long [L]		
Measuring unit	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]	None [_]	Absolute encoder, multi-turn [M]	Absolute encoder, single turn [S]
Conforms to standard	IEC 60034								
Motor type to EN 60034-7	IM B5, IM V1, IM V3								
Degree of protection	IP40								
Note on degree of protection	IP40 motor shaft, IP65 for motor housing, incl. connection technology								
Ambient temperature	-15 ... 40°C								
Note on ambient temperature	Up to 80°C with derating -2%/°C								
Storage temperature	-20 ... 70°C								
Max. winding temperature	130°C								
Temperature monitoring	–	Digital Motor temp. via BiSS-C	–		Digital Motor temp. via BiSS-C	–		Digital Motor temp. via BiSS-C	–
Rating class as per EN 60034-1	S1								
Temperature class as per EN 60034-1	B								
Relative air humidity	0 - 90%, Non-condensing								
CE mark (see declaration of conformity) [1]	To EU EMC Directive In accordance with EU RoHS Directive								
UKCA marking (see declaration of conformity)[2]	To UK instructions for EMC To UK RoHS instructions								
Approval	RCM c UL us - Recognised (Oil)								
Certificate issuing authority	UL E342973								
Vibration resistance	Transport application test with severity level 2 to FN 942017-4 and EN 60068-2-6								
Shock resistance	Shock test with severity level 2 to FN 942017-5 and EN 60068-2-27								
Isolation resistance AC	0.6								
LABS (PWIS) conformity	VDMA24364 zone III								
Note on materials	RoHS compliant								

1) More information www.festo.com/catalogue/emms-st → Downloads.

2) More information www.festo.com/catalogue/emms-st → Downloads.

Torque M as a function of rotational speed n for EMMT-ST-42-S

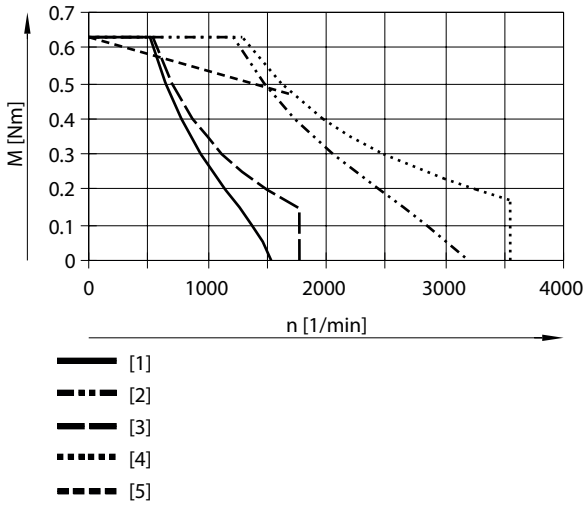


[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Datasheet

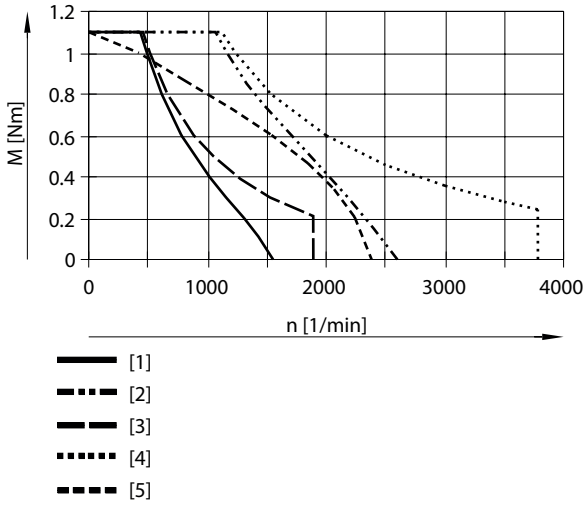
Torque M as a function of rotational speed n for EMMT-ST-42-L



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

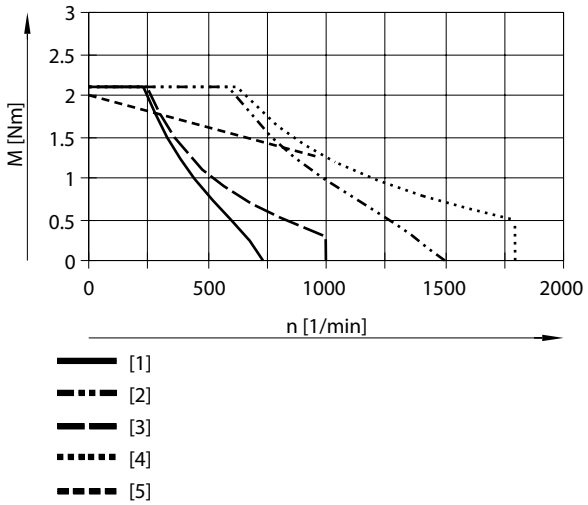
Torque M as a function of rotational speed n for EMMT-ST-57-M



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Torque M as a function of rotational speed n for EMMT-ST-57-L

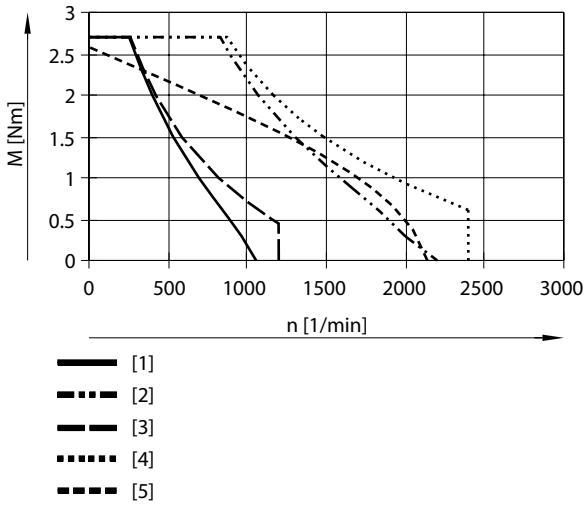


[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Datasheet

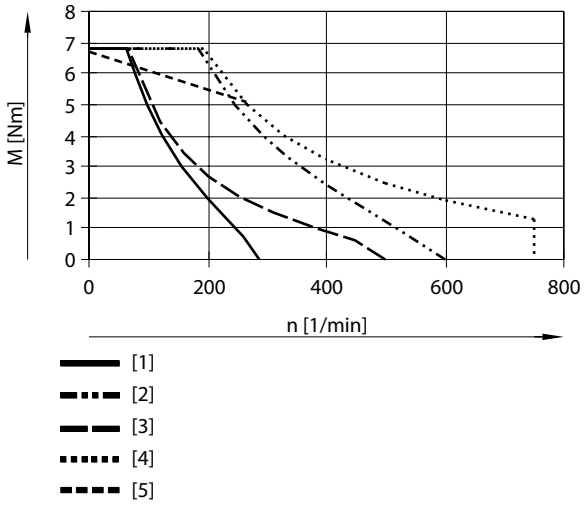
Torque M as a function of rotational speed n for EMMT-ST-87-S



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

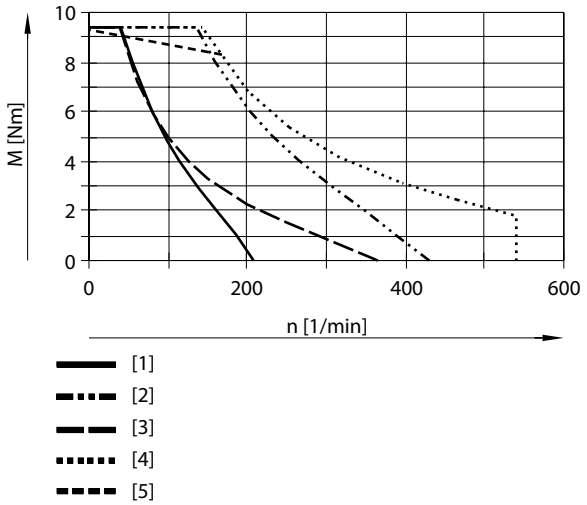
Torque M as a function of rotational speed n for EMMT-ST-87-M



[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Torque M as a function of rotational speed n for EMMT-ST-87-L

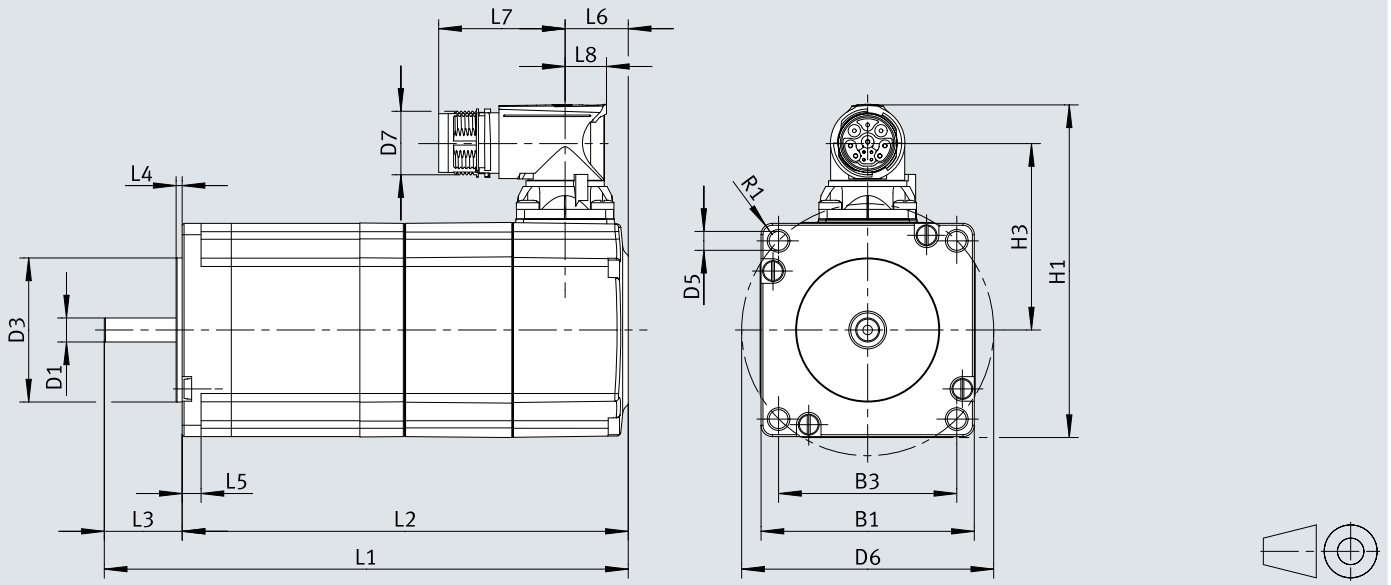


[1] Peak torque at 24V DC
[2] Peak torque at 48V DC
[3] Field weakened peak torque at 24V DC
[4] Field weakened peak torque at 48V DC
[5] Nominal torque

Typical motor characteristic curve with nominal voltage and optimal motor controller.
Observe max. permissible rotational speed for add-on and installation components (such as encoders, brakes, etc.)!

Dimensions

Dimensions – EMMT-ST Download CAD data www.festo.com

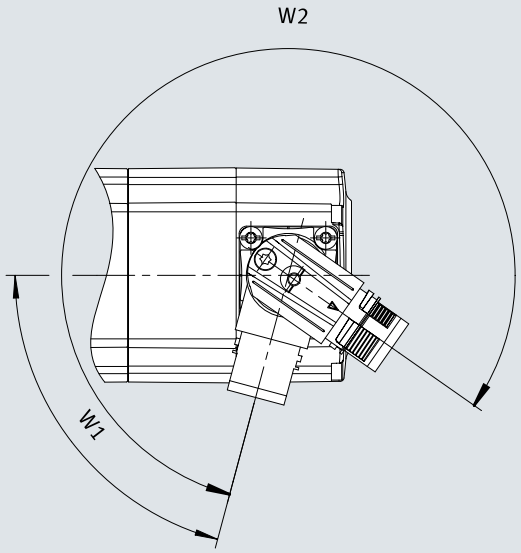


		B1	B3 ±0,2	D1 ø h6	D3 ø h8	D5	D6 ø	D7	H1	H3
EMMT-ST-42	S	42	31	5	22	M3	43,8	M17	73,3	41,9
	S-B									
	L									
	L-B									
EMMT-ST-57	M	56,4	47,1	6,35	38,1	5	66,7	M17	88	49,3
	M-B									
	L									
	L-B									
EMMT-ST-87	S	85,9	69,5	11	73	6,6	98,3	M17	118	64,4
	S-B									
	M									
	M-B									
	L									
	L-B									

		L1	L2 ±2	L3 ±0,5	L4 ±0,2	L5	L6	L7	L8	R1
EMMT-ST-42	S	94	70	24	2	–	16	33,4	11	2,3
	S-B	124	100							
	L	112	88							
	L-B	142	118							
EMMT-ST-57	M	110,1	89,5	20,6	1,6	5	16,7	33,4	11	3
	M-B	138,6	118							
	L	131,1	110,5							
	L-B	159,6	139							
EMMT-ST-87	S	121	94	27	2	8	16	33,4	11	5,5
	S-B	149,5	122,5							
	M	154,5	127,5							
	M-B	183	156							
	L	184,5	158,5							
	L-B	213	186							

Dimensions

Dimensions – Connection Download CAD data www.festo.com



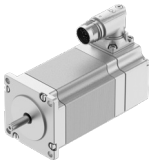
	W1	W2
EMMT-ST-...	75°	290°

Ordering data

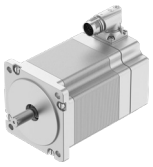
Flange size 42

	Flange size, motors [mm]	Measuring unit	Brake	Part no.	Type
	42 mm	None	None	**8156161**	**EMMT-ST-42-S-R**
				8156167	**EMMT-ST-42-L-R**
			With brake	**8156170**	**EMMT-ST-42-L-RB**
				8156164	**EMMT-ST-42-S-RB**
		Absolute encoder, multi-turn	None	**8156169**	**EMMT-ST-42-L-RM**
				8156163	**EMMT-ST-42-S-RM**
			With brake	**8156166**	**EMMT-ST-42-S-RMB**
				8156172	**EMMT-ST-42-L-RMB**
		Absolute encoder, single turn	None	**8156162**	**EMMT-ST-42-S-RS**
				8156168	**EMMT-ST-42-L-RS**
			With brake	**8156171**	**EMMT-ST-42-L-RSB**
				8156165	**EMMT-ST-42-S-RSB**

Flange size 57

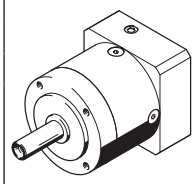
	Flange size, motors [mm]	Measuring unit	Brake	Part no.	Type
	57 mm	None	None	**8156179**	**EMMT-ST-57-L-R**
				8156173	**EMMT-ST-57-M-R**
			With brake	**8156182**	**EMMT-ST-57-L-RB**
				8156176	**EMMT-ST-57-M-RB**
		Absolute encoder, multi-turn	None	**8156181**	**EMMT-ST-57-L-RM**
				8156175	**EMMT-ST-57-M-RM**
			With brake	**8156184**	**EMMT-ST-57-L-RMB**
				8156178	**EMMT-ST-57-M-RMB**
		Absolute encoder, single turn	None	**8156180**	**EMMT-ST-57-L-RS**
				8156174	**EMMT-ST-57-M-RS**
			With brake	**8156183**	**EMMT-ST-57-L-RSB**
				8156177	**EMMT-ST-57-M-RSB**

Flange size 87

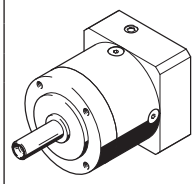
	Flange size, motors [mm]	Measuring unit	Brake	Part no.	Type
	87 mm	None	None	**8156185**	**EMMT-ST-87-S-R**
				8156197	**EMMT-ST-87-L-R**
				8156191	**EMMT-ST-87-M-R**
			With brake	**8156188**	**EMMT-ST-87-S-RB**
				8156200	**EMMT-ST-87-L-RB**
				8156194	**EMMT-ST-87-M-RB**
		Absolute encoder, multi-turn	None	**8156193**	**EMMT-ST-87-M-RM**
				8156199	**EMMT-ST-87-L-RM**
				8156187	**EMMT-ST-87-S-RM**
			With brake	**8156196**	**EMMT-ST-87-M-RMB**
				8156190	**EMMT-ST-87-S-RMB**
				8156202	**EMMT-ST-87-L-RMB**
		Absolute encoder, single turn	None	**8156186**	**EMMT-ST-87-S-RS**
				8156198	**EMMT-ST-87-L-RS**
				8156192	**EMMT-ST-87-M-RS**
			With brake	**8156201**	**EMMT-ST-87-L-RSB**
				8156189	**EMMT-ST-87-S-RSB**
				8156195	**EMMT-ST-87-M-RSB**

Accessories

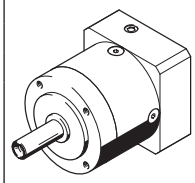
Planetary gear for EMMT-ST-42

	Gear unit ratio	Note on materials	Product weight	Part no.	Type
	3:1	RoHS compliant	350 g	549428	EMGA-40-P-G3-SST-42
	5:1			549429	EMGA-40-P-G5-SST-42
	8:1		400 g	8141762	EMGA-40-P-G8-SST-42
	12:1		450 g	8141763	EMGA-40-P-G12-SST-42

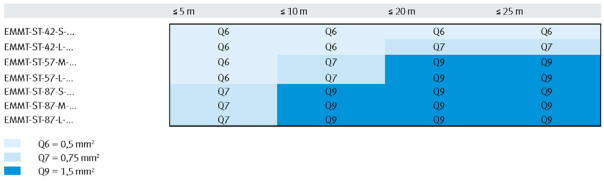
Planetary gear for EMMT-ST-57

	Gear unit ratio	Note on materials	Product weight	Part no.	Type
	3:1	RoHS compliant	900 g	549430	EMGA-60-P-G3-SST-57
	5:1			549431	EMGA-60-P-G5-SST-57
	8:1			8141764	EMGA-60-P-G8-SST-57
	12:1		1,100 g	8141765	EMGA-60-P-G12-SST-57

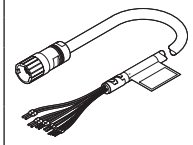
Planetary gear EMMT-ST-87

	Gear unit ratio	Note on materials	Product weight	Part no.	Type
	3:1	RoHS compliant	2,100 g	549432	EMGA-80-P-G3-SST-87
	5:1			549433	EMGA-80-P-G5-SST-87
	8:1			8141766	EMGA-80-P-G8-SST-87
	12:1		2,600 g	8141767	EMGA-80-P-G12-SST-87

Recommended cable cross section as a function of cable length and servo drive CMMT-ST



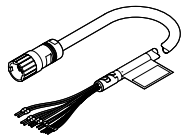
Motor cable with cable cross-section 0.5 mm² for servo drive CMMT-ST

	Bending radius, moving cable	Cable characteristic	Ambient temperature	Cable length [1]	Part no.	Type
	78.75 mm	Suitable for energy chains	-40 ... 90 °C	2.5 m	8181670	NEBM-M17G12-EH-2.5-Q6N-LE12
				5 m	8181668	NEBM-M17G12-EH-5-Q6N-LE12
				7.5 m	8190096	NEBM-M17G12-EH-7.5-Q6N-LE12
				10 m	8195457	NEBM-M17G12-EH-10-Q6N-LE12
	78.75 ... 81 mm			0.5 ... 20 m	8181663	NEBM-LX/M17-

1) For NEBM-LX/M17-...: cable lengths can be selected from 0.5 ... 25 m, in increments of 0.5 m and in all cable cross-sections Q6, Q7, Q9
For NEBM-LX/M17-...: the extension cables can also be configured via the modular product system.

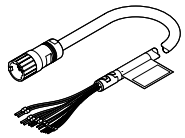
Accessories

Motor cable with cable cross-section 0.75 mm² for servo drive CMMT-ST

	Bending radius, moving cable	Cable characteristic	Ambient temperature	Cable length [1]	Part no.	Type
	78.75 mm	Suitable for energy chains	-40 ... 90 °C	2.5 m	**8195458**	**NEBM-M17G12-EH-2.5-Q7N-LE12**
				5 m	**8195459**	**NEBM-M17G12-EH-5-Q7N-LE12**
				7.5 m	**8195460**	**NEBM-M17G12-EH-7.5-Q7N-LE12**
				10 m	**8195461**	**NEBM-M17G12-EH-10-Q7N-LE12**
	78.75 ... 81 mm			0.5 ... 20 m	**8181663**	**NEBM-LX/M17-**

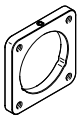
1) For NEBM-LX/M17-...: cable lengths can be selected from 0.5 ... 25 m, in increments of 0.5 m and in all cable cross-sections Q6, Q7, Q9
For NEBM-LX/M17-...: the extension cables can also be configured via the modular product system.

Motor cable with cable cross-section 1.5 mm² for servo drive CMMT-ST

	Bending radius, moving cable	Cable characteristic	Ambient temperature	Cable length [1]	Part no.	Type
	78.75 ... 81 mm	Suitable for energy chains	-40 ... 90 °C	0.5 ... 20 m	**8181663**	**NEBM-LX/M17-**
	81 mm			2.5 m	**8234028**	**NEBM-M17G12-EH-2.5-Q9N-LE12**
				5 m	**8234029**	**NEBM-M17G12-EH-5-Q9N-LE12**
				7.5 m	**8234030**	**NEBM-M17G12-EH-7.5-Q9N-LE12**
				10 m	**8234031**	**NEBM-M17G12-EH-10-Q9N-LE12**

1) For NEBM-LX/M17-...: cable lengths can be selected from 0.5 ... 25 m, in increments of 0.5 m and in all cable cross-sections Q6, Q7, Q9
For NEBM-LX/M17-...: the extension cables can also be configured via the modular product system.

Mounting flange for fitting the motor cable plug (e.g. on the control cabinet)

	Degree of protection	LABS (PWIS) conformity	Part no.	Type
	IP67	VDMA24364 zone III	**8191777**	**NEAM-MF-M17**